Fisheries-dependent landings data for the East Florida Golden Tilefish (*Lopholatilus chamaeleonticeps*) Fishery

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Abstract

Commercial golden tilefish (GT) (*Lopholatilus chamaeleonticeps*) fisheries landings data reported from East Florida, and derived from the Florida Fish & Wildlife Conservation Commission (FFWCC) Marine Fisheries Information System (MFIS) database, were utilized to construct a fishery dependant analysis for the development of Atlantic GT South Atlantic Fishery Management Council (SAFMC) policy. Landings data collected and reported here represent the majority (> 75%) of all GT landings from the South Atlantic Fishery Management Council region.

Annual landing data were assessed as a function of: 1) landed adult weight distribution class, 2) gear-type utilized in landings, and 3) fishing effort (CPUE). East Florida GT landings data are sorted by size class, i.e. small = <4 lbs., medium = 4-7 lbs., and large = 7-14 lbs. From the period of 2002-2011 landings of large GT increased from a low of ~40% of the total landings in 2003 to a high of over 70% in 2011. Meanwhile, landings of small class size and medium class size GT decreased from 17% to 1% and 49% to 28%, respectively in the same time period.

In terms of gear-type utilized to land GT from the commercial GT fishery, longline (LL) gear has continued to be the dominant gear utilized for ~ 92% of the landings from 2002 to 2011. The utilization of bandit gear and hook & line gear has become less important with respect to total landings during the 2002-2011 study period. Bandit gear was responsible for 2% of the landings in 2002, but has been responsible for

less than 1% of the landings, since. Likewise, hook & line landings have remained below 10% since 2005, and were at an all time low of ~3% in 2011. Trip logbooks from GT trips were utilized to calculate a nominal catch per unit effort (CPUE). Data pooled from 2000-2011 trips (n= 22 trips/year) indicate an increasing slope in CPUE since 2004. These data are more accurate spatially and temporally than GT CPUE data calculated from previous fishery-independent National Marine Fisheries Service (NMFS) funded (MARMAP) assessments.

Introduction

Golden tilefish (GT) (*Lopholatilus chamaeleonticeps*) are fished commercially in the South Atlantic Fishery Management Council (SAFMC) region. They are common in the 300m depth range in portions of the continental shelf where silt and clay sediments are utilized to construct vertical and horizontal burrows (Abel et al. 1993). GT have been historically fished with landings off of East Central Florida peaking in the mid-1980's. As this species is managed within the SAFMC Snapper-Grouper species complex under the Magnuson-Stevens Fishery Conservation and Management Act, a quota system has been in place, which is now set at ~ 295,000 lbs. per year for the SAFMC region. As a result, a beneficial description of the dynamics of the GT population and resulting fishing effort are available in the landings data. These fishery-dependant data are presented here and represent the results of management action and trends in landings data.

The information used in this fisheries-dependant assessment of the East Florida golden tilefish fishery was obtained from two confidential sources: 1) individual fish house landings data reported from the Florida Fish & Wildlife Conservation Commission (FFWCC) Marine Fisheries Information System (MFIS) database, resulting from Trip Ticket data; and 2) federally mandated logbook data from voluntarily participating commercial fishing boat captains. The MFIS GT landings data were supplied to the authors via participating fish houses, as a result, it is not a complete inventory of the landings data (see Figure 1). These reports supplied annual landings data from individual

fish houses, as a function of reported weight class, and gear fished, and the number of trips. Logbook data included specifics on fishing effort for each trip.

For longline (LL) trips, data on LL length, number of hooks per LL, number of LL sets, and resulting catch weight were utilized to characterize fishing effort.

Results and Discussion

Data reported here represent landings information from the significant wholesale fish houses in East Central Florida, the collective landings reported from these sources represents the majority (~ 75%) of the commercial GT landings in the SAFMC region (see Figure 1). As a result, these data and resulting analyses represent not only a significant description of the GT fisheries landings of East Central Florida, but likewise, those of the whole SAFMC region.

Gear Type

Landings reports from the state of Florida's MFIS database were utilized to sort gear type as a function of landings for data collected from 2002-2011. Over the past 10 years, LL gear has historically been utilized as the primary method for GT landings along the east coast of Florida (see Table 1.), representing > 92% of all GT commercial landings from 2002-2011. The utilization of bandit gear and other hook & line gear has become less important for total landings over the duration of the 2002-2011 study period. Bandit gear was responsible for 2% of the landings in 2002, but has been responsible for less than 1% of the landings, since. Likewise, hook & line landings have remained below 10% since 2005, and were at an all time low of ~3% in 2011.

Size distribution of GT landings

The state of Florida's MFIS database was likewise utilized to assess the weight distribution of landed GT from 2002-2011. Landings data are reported, and for the purposes of this analysis, sorted into 3 weight classes: *small*= <4 lbs., *medium*= 4-7 lbs., and *large*= 7-14 lbs. Over the course of this annual analysis, some obvious trends are evident when these 3 size classes are presented as a proportion of the total landings (see

Figure 2.). From the period of 2002-2011 landings of *large* GT increased from a low of ~40% of the total landings in 2003 to a high of over 70% in 2011.

Meanwhile, landings of *small* class sized and *medium* class size decreased from 17% to 1% and 49% to 28%, respectively, in the same time period. These results suggest a population of adults is sustainably being fished, with proportions of large size class fish increasing as a function of time.

Catch Per Unit Effort

Logbook data from individual GT boat captains were utilized to characterize fishing effort with respect to landings as a function of individual trips. For the purposes of this analysis, a boat's trips within a season, within a specific SAFMC fishing zone, provided significant replication to suggest annual catch per unit effort (CPUE) within the fishery. Data from other boats provide within annual comparison, so that annual trends in fishery populations with respect to fishing pressure may become clear. Statistically significant CPUE data for GT has been previously reported by Grimes et al. (1980) to assess fishing pressure on Mid-Atlantic populations of GT, with data reported as landings per hook on long line gear. For the purposes of this study, CPUE is likewise calculated as: catch wt./ hooks x set with respect to landings data reported per trip, where data on number of sets per trip is provided. These data (see Table 2.) are site specific for the commercial fishery and represent a time-series from one of the highest landing vessels from 2000-2011. These CPUE values, therefore, are a more accurate database than previously reported fisheries-independent MARMAP assessments, where data were largely collected in areas where there is no significant GT fishery.
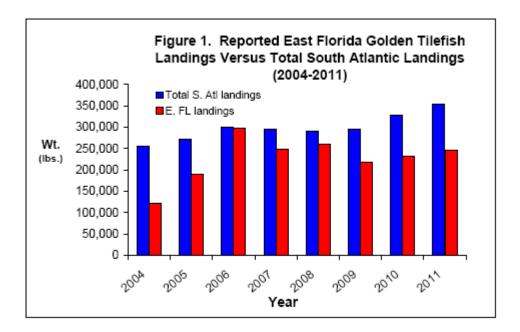
Recommendations

The SAFMC should:

1) Recognize the significance of fisheries-dependant data for tracking population dynamics of fisheries competent east FL GT populations with respect to fisheries pressure.
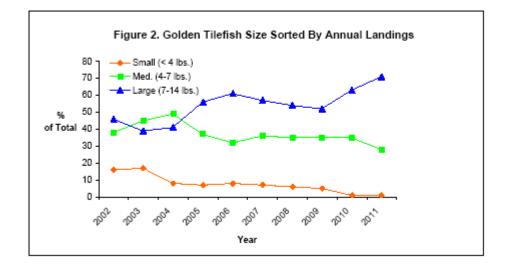
2) Utilize an independent analyses of logbook data to calculate fisheries relevant GT CPUE, as GT fisheries stock assessments become available and quotas are considered.

References

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Figure 1. Reported East Florida Golden Tilefish Landings Versus Total South Atlantic Landings (2004-2011)

Figure 2. Golden Tilefish Size Sorted By Annual Landings

Table 1. Golden Tilefish Landings Per Gear-type
2002-2011. LL= long line, H&L= hook and line, BR= bandit rig

Year	% Landings per gear-type			Total Landings
	LL	H&L	BR	
2002	92	6	2	231,055
2003	95.5	4.2	0.3	134,345
2004	84.1	15.5	0.4	121,487
2005	89.7	9.7	0.6	189,166
2006	94.9	4.7	0.4	296,943
2007	89.9	9.5	0.6	248, 084
2008	93.1	6.3	0.6	259,290
2009	91.4	8.6	0	217,447
2010	95.5	4.5	0	230,663
2011	97.1	2.9	0	246,240
mean	92.3%	7.2%	0.5%	

Table 2. Summary Table of Catch Per Unit Effort (CPUE) for E. FL Golden Tilefish Landings

Boat	Year	SAFMC region	n = # of trips	Mean # sets/ trip	Mean # hooks	mean# hook*hrs.	Mean Long Line length (mi.)	Mean trip GT gutted wt.(lbs.)	CPUE (mean ± SD) (catch wt.(lbs.)/ hooks x sets)	
									mean	SD
A	2011	2880	13	4.1	715		6.4	2400.5		
A	2010	2880	12	2.8	762		7.9	2495.8		
B	2011	2779	22	1.7	1095	2439	5.4	2707	1.35	0.27
B	2010	2779	29	1.7	779	779	5.9	2575	1.95	0.81
B	2009	2779	28	3.1	512	512	3.5	1508	0.85	0.24
B	2008	2779	40	3.1	413	413	3.1	1341	0.91	0.27
B	2007	2779	49	2.7	505	606	3.4	1014	0.67	0.15
B	2006	2779	14	6.3	686	2151	3.9	2222	0.49	0.15
B	2005	2779	19	4.8	645	1935	4	1786	0.64	0.31
B	2004	2779	12	5.6	730	2192	4	1749	0.43	0.08
B	2003	2779	13	3.1	240	2400	4	431	0.61	0.32
B	2002	2779	22	4.7	624	3336	4	999	0.36	0.18
B	2001	2779	18	6.4	658	1973	4	1177	0.29	0.11
B	2000	2779	9	3.9	411	2969	4	1415	1.01	0.4
			22.92							

CPUE for E. FL Golden Tilefish 2000-2011 (Boat B time series)